GANAGO, L.I.

4008

1014. **Determination of iron in glass by surface testing.** L. I. Ganago and N. A. Tananaev (Ural Polytech. Inst.). *Zavod. Lab.*, 1955, 21 (9), 1040–1041.—After treatment of the glass surface with HF confined in a ring of paraffin wax, the solution diluted with water is transferred to a platinum crucible and evaporated to dryness. The residue is mixed with 5 or 6 drops of water and 3 or 4 drops of dil. H_2SO_4 (1 + 3) and boiled for a few sec. The solution is transferred to a 10-ml cylinder and treated with 4 or 5 drops of 3 per cent. ammonium persulphate solution and 2 drops of dil. H_2SO_4 (1 + 3). After addition of 0·1 ml of saturated NH_4SCN solution for each ml of the solution the colour is compared with that from a standard glass treated similarly. (*Cf. Anal. Abstr.*, 1956, 3, 1031.)

G. S. SMITH

Category: USSR/Analytical Chemistry - Analysis of inorganic substances. G-2

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 31006

Author : Tananayev N. A., Ganago L. I.
Inst : Urals Polytechnic Institute
Title : Chipless Method of Determination of Glass Colorants. (Determination of Cobalt).

Orig Pub: Tr. Ural'skogo politekhn. in-ta, 1956, sb. 57, 5-8

Abstract: On the clean surface of the specimen under study and of the standard specimen, into a paraffin cell, are placed 2 drops of HF; after 5 minutes the solution is diluted with 2-4 drops of water and transferred to a cylinder. It is diluted to 1.5-2 ml, 3-4 drops of H_2SO_4 (1:1) are added, the solution is boiled until it becomes clear. Then 1-2 ml water, 1-1.5 ml of saturated solution of CH_3COONa, and 8-10 drops of 0.05% solution of nitroso-R-salt or of alpha-nitroso-beta-naphthol, are added. The mixture is boiled for 30 seconds, 1-2 ml concentrated HNO_3 are added and

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Category: USSR/Analytical Chemistry - Analysis of inorganic substances. G-2

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 31006

boiling is continued for another 30 seconds. Co content is calculated according to the formula C'= V'.C"/V", wherein C' and C" -- Co_3O_4 content in sample under study and in standard specimen (in %), V' and V" -- volumes of equally colored solutions obtained from sample under study and standard specimen. Duration of the determination is of 15-20 minutes. Photometry is possible with a blue light filter.

Card : 2/2

Ganago L. I.

Category: USSR / Analytical Chemistry - Analysis of inorganic substances G-2

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30995

Author : Tananayev N. A., Ganago L. I.
Inst : Urals Polytechnic Institute
Title : Chipless Method of Determination of Glass Colorants. (Determination of Chromium).

Orig Pub: Tr. Ural'skogo politekhn. in-ta, 1956, sb. 57, 73-75

Abstract: On the clean surface of the specimen under study and of a standard specimen, into a paraffin cell, are placed 2 drops of HF; after 5 minutes the solution is diluted with 3-4 drops H_2SO_4 (1:1) until clear. Thereafter are added 2 drops of 0.1% solution of $AgNO_3$, 2 drops of 0.05% solution of $MnSO_4$ and 2 drops of saturated solution of $(NH_4)_2S_2O_8$. The mixture is boiled until the evolution of O_2 ceases, is then transferred into a cylinder with 4-5 drops H_2SO_4 (1:3) and 8-15 drops of 0.2% alcoholic solution of diphenyl-carbazide acidified with acetic

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Ganago, L. I.

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Category: USSR/Analytical Chemistry - Analysis of inorganic substances.

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30965

Author : Ganago L. I., Tananayev N. A.
Inst : Ural's Polytechnic Institute
Title : Chipless Method of Determination of Glass Colorants. (Determination of Copper).

Orig Pub: Tr. Ural'skogo politekhn. in-ta, 1956, sb. 57, 126-128

Abstract: On the clean surface of the specimen under study and of a standard specimen, into a paraffin cell, are placed two drops of HF; after 5 minutes 3-4 drops of water are added, the solution is transferred to a cylinder, diluted to 1.5-2 ml, 3-4 drops of H_2SO_4 (1:1) are added, and the mixture is boiled until it becomes clear. 1-2 ml water are added, followed by 6-8 drops of saturated solution of pyrophosphate and 10-15 drops of an 0.1% solution of Na-diethyl dithiocarbamate. The color of the two

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Card : 1/2

Category: USSR/Analytical Chemistry - Analysis of inorganic substances. G-2

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30965

solutions is equalized by addition of water. Determination of Cu requires 15 minutes. It is possible to carry out a photometric determination using a blue light filter.

Card : 2/2

GANAGO, L.I.; Prinimali uchastiye: OVCHINNIKOVA, N., studentka; PEVNEVA, M., studentka

Determination of copper in ruby glasses without taking a weighed portion. Izv.vys.ucheb.zav.; khim.i khim.tekh. 4 no.5: 865-866 '61. (MIRA 14:11)

1. Stalingradskiy mekhanicheskiy institut, kafedra khimii.
(Copper—Analysis) (Glass, Colored)

GANAGO, L.I.; OVCHINNIKOVA, N.P.

Application of the method without chipping to the analysis of basic open-hearth slags. Izv.vys.ucheb.zav.;khim.i khim.tekh. 5 no.3:364-366 '62. (MIRA 15:7)

1. Volgogradskiy mekhanicheskiy institut, kafedra khimii.
(Slag)

GANAGO, L.I.

Determination of molybdenum and vanadium in steel by the method without chipping. Izv.vys.uch.zav.; khim.i khim.tekh. 5 no.4:670-671 '62. (MIRA 15:12)

1. Volgogradskiy mekhanicheskiy institut, kafedra khimii.
(Molybdenum--Analysis)
(Vanadium--Analysis) (Steel--Analysis)

GANAGO, L.I.; STEPANOVA, T.V.

Rapid method of determining selenium in ruby glasses. Izv.vys.ucheb. zav.;khim.i khim.tekh. 6 no.4:695-697 '63. (MIRA 17:2)

1. Volgogradskiy mekhanicheskiy institut. Kafedra analiticheskoy khimii.

ACC NR: AP6036892 (N) SOURCE CODE: UR/0226/66/000/011/0007/0008

AUTHOR: Stepanova, T. V.; Ganago, L. I.

ORG: Volgograd Polytechnic Institute (Volgogradskiy politekhnicheskiy institut)

TITLE: Chemical nickelizing of ion powders

SOURCE: Poroshkovaya metallurgiya, no. 11, 1966, 7-8

TOPIC TAGS: nickelizing, chemical nickelizing, iron powder, electrolyte, nickel plating

ABSTRACT: A new method is proposed for chemical nickelizing of iron powder based on the reduction of nickel ions with hypophosphite from an aqueous solution. Both the electrolyte and the method were found to yield nickel coatings of good quality. [Based on authors' abstract] [NT]

SUB CODE: 11/ SUBM DATE: 06Jan66/ ORIG REF: 005/ OTH REF: 001/

Card 1/1

GANAGO, O.A., kandidat tekhnicheskikh nauk; TARNOVSKIY I.Ya., professor, doktor tekhnicheskikh nauk; KRASOVSKIY, N.N., inzhener.

Designing optimum blank shapes for forging gear-type products. Trudy Ural.politekh.inst. no.45:137-151 '53. (MLRA 9:11)
(Forging)

Ganago, O. A. and Tarnovskiy, I. Ya.

"Filling in of Annular Dies", Raschet i Konstruirovaniye Zavodskogo Oborudovaniya, Trudy 48 (Sbornik Statey), Ural'skiy Politekhnicheskiy Institut, Sverdlovsk-Moscow, 1953, pp 83-99.

DUNAYEV, P.A.; RAYTSES, V.B.; GUTMAN, I.M., inzhener, retsenzent; GANAGO, O.A., kandidat tekhnicheskikh nauk, retsenzent; NAUMOV, V.P., redaktor; DUGINA, N.A., tekhnicheskiy redaktor

[Blacksmithing in a machine-tractor repair shop] Kuznechnoe delo v MTM. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1954. 125 p. (MLRA 8:7)
(Blacksmithing)

GANAGO, O.A.; TARNOVSKIY, I.Ya; DUGINA, N.A., tekhnicheskiy redaktor.

[Seamless drop hammer forging] Bezobloinaia shtampovka na molotakh. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1955 84 p. (MLRA 8:8)

(Forging)

Ganago, O. A. and Tarnovskiy, I. Ya.

"Bexoblaynaya Shtampovka na Molotakh" (Flashless Forging on Hammers), Mashgiz, Moscow, 1955, 86 pp. (See also: Sbornik - Progress Tekhnologiya Kuznechno-Shtampovochnogo Proizvodstvo, Mashgiz, 1954.)

GANAGO O.A.

TARNOVSKIY, I.Ya., doktor tekhnicheskikh nauk, redaktor; GANAGO, O.A., kandidat tekhnicheskikh nauk, redaktor; VSHIVKOV, P.P., inzhener, redaktor; DUGINA, N.A., tekhnicheskiy redaktor

[Ural forge operators in the struggle for technical progress; a collection of articles] Ural'skie kuznetsy v bor'be za tekhnicheskii progress; sbornik statei. Moskva, Gos. nauchno-tekhn. izd-vo mashino-stroit. lit-ry, 1955. 197 p. (MLRA 9:12)

1. Ural'skiy politekhnicheskiy institut imeni S.M.Kirova (for Tarnovskiy, Ganago)
(Ural Mountain region--Forging)

PETUKHOV, P.Z., doktor tekhnicheskikh nauk, redaktor; MIKHAYLOV, G.P., doktor tekknicheskikh nauk, redaktor; SOKOLOV, K.N., kandidat tekhnicheskikh nauk, redaktor; SHUNAYEV, B.K., kandidat tekhnicheskikh nauk, redaktor; GANAGO, O.A., kandidat tekhnicheskikh nauk, redaktor; KAZAK, S.A., kandidat tekhnicheskikh nauk, redaktor; BORETSKIY, A.A., dotsent, kandidat tekhnicheskikh nauk, redaktor; STUDNITSYN, B.P., vedushchiy redaktor; DUGINA, N.A., tekhnicheskiy redaktor.

[Examples of automatization and mechanization of production] Primery avtomatizatsii i mekhanizatsii proizvodstva. Moskva, Ges.nauchno-tekhn.izd-vo mashino-stroit.lit-ry, 1955. 285 p. (Iz opyta Ural'skikh i Sibirskikh zavodov, no.1). (MLRA 9:6) (Automation) (Machinery industry)

GANAGO, O. A.

PHASE I BOOK EXPLOITATION 500

Naumov, Vasiliy Prokhorovich

Goryachaya shtampovka (Hot Forging) Moscow, Mashgiz, 1956. 56 p. (Series: Nauchno-populyarnaya biblioteka rabochego kuznetsa, vyp. 9) 10,000 copies printed.

Ed.: Ganago, O.A., Candidate of Technical Sciences; Reviewers: Tarnovskiy, I.Ya., Doctor of Technical Scienes, Professor, and Raytses, V.I., Engineer; Tech. Ed.: Dugina, N.A.; Managing Ed. of the Ural-Siberian Branch of Mashgiz: Kaletina, A.V., Engineer.

PURPOSE: This pamphlet, issued by the Popular Scientific Worker's Library, is the ninth in a series of pamphlets which aim at improving the theoretical knowledge of workers in forging shops.

COVERAGE: This pamphlet is devoted to the theory and practice of various forging methods in current use. The author discusses the general technological aspects of forging and continues with a description of equipment and methods of operation. The principles

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of smith-, drop-, machine- and press forging are briefly explained. There is a short description of a horizontal press forging machine of 50,000 to 75,000 ton capacity used in the aircraft industry. Some space is devoted to the "interesting process of compression molding of molten metal which combines the advantages of forging and casting". In this method the die is filled with a measured amount of molten metal which is then compressed by a descending plunger filling the cavity of the die. The solidification of metal takes place under pressure which gives it a dense, fine-grained structure free of porosity, with good dimensional accuracy and surface quality. Compression molding is most suitable for copper, aluminum, brass and bronze castings. The author predicts a bright future and numerous applications for this method. Experiments with steel have so far been unsuccessful, as the temperature of molten steel has a destructive effect on the dies. It is further mentioned that within the scope of the Sixth Five Year Plan a new forging plant is to be built in the Ural area with a 120,000 ton annual capacity. In conclusion the author states that the trend should be toward improved methods of forging which would require little or no machining. As an example he mentions the "Krasnogvardeyets" plant in Leningrad, which is said to produce forgings with a grade 4 to 5 surface finish. This pamphlet deals more with the general aspects of forging than with the

technological details of any one forging method. No personalities are mentioned. There are 7 references all of which are Soviet.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress

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GO/ad
8-8-58

NAUMOV, Vasiliy Prokhorovich; GANAGO, O.A., kandidat tekhnicheskikh nauk, redaktor; DUGIN, N.A., tekhnicheskiy redaktor.

[Hot stamping] Goriachaia shtampovka. Pod.red.O.A. Ganago. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1956. 48 p. (Nauchno-populiarnaia biblioteka rabochego kuznetsa, no.9)[Microfilm]
(MIRA 10:4)

(Forging)

KOLTUN, Sergey Ivanovich; IVUSHKIN, Mikhail Prokhorovich; SOSNOVSKIY, Georgiy Ivanovich; GAMAGO, O.A., kandidat tekhnicheskikh nauk, redaktor; PUCHKOV, S.G., inzhener, redaktor; DUGINA, N.A. tekhnicheskiy redaktor

[Economy of sheet steel] Ekonomiia shtampovoi stali. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 50 p. (MLRA 10:5)

(Sheet-metal work)

VSHIVKOV, Petr Pavlovich; GANAGO, O.A., kandidat tekhnicheskikh nauk, retsenzent; MOROZEVICH, B.A., inzhener, retsenzent; ZLATKIN, M.G., inzhener, redaktor; SARAFANNIKOVA, G.A., tekhnicheskiy redaktor

[Hammer forging] Svobodnaia kovka. Pod red. M.G.Zlatkina. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1957. 62 p. (Nauchno-populiarnaia biblioteka rabochego kuznetsa, no.6)
(Forging) (MLRA 10:10)

BAGROV, Igor' Nikolayevich; PUCHKOV, Stanislav Grigor'yevich; ZAKHAROV, B.P., red.; GANAGO, O.A., kand.tekhn.nauk, red.; SARAFANNIKOVA, G.A., tekhn.red.

[Forging and stamping] Kuznechno-shtampovochnoe proizvodstvo. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 65 p. (Nauchno-populiarnaia biblioteka rabochego - kuznetsa, no.1) (Forging)

GANAGO, O. A., Cand.Tech. Sci.

"Widening Possibilities for the Use of Stamping in Manufacturing Machine Parts" p. 357-372 in book
Increasing the Quality and Efficiency of Machinery, Moscow, Mashgiz, 1957, 626pp.

SOV/163-58-2-33/46

AUTHORS: Tarnovskiy, I. Ya., Ganago, O. A., Vaysburd, R. A.

TITLE: Theoretical Investigations in Open and Closed Dies for Annular Swage Blocks (Teoreticheskoye issledovaniye shtampovki pokovok kol'tsevoy formy v otkrytykh i zakrytykh shtampakh)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 2, pp. 184 - 191 (USSR)

ABSTRACT: The stages of annular swage blocks in open and closed dies were investigated. In punching in open dies the filling in of the metal into the cavities of the dies as well as the flow of the metal are determined by the position of the critical surface. In stamping in closed dies an unequal flow of the metal in the open zone is observed. This influence is explained by the different direction of the internal friction forces in those zones. The rules governing the flow of the metals in various stages of the stamping of annular swage blocks were determined. A simple formula for any moment of the depression, in the second stage of stamping was found (7). By knowing the position of the

Card 1/2

Theoretical Investigations in Open and Closed Dies for Annular Swage Blocks

SOV/163-58-2-33/46

critical surface for any moment of the depression in the second stage of stamping the height of the metal in cavity may be calculated at any single moment. Taking into account the rules governing the flow of the metal in the various cavities as well as the velocity factors in stamping an efficient construction of the dies may be reached. There are 5 figures and 2 references, 2 of which are Soviet.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: October 5, 1957

Card 2/2

VSHIVKOV, Petr Pavlovich; GANAGO, O.A., kand.tekhn.nauk, retsenzent; KON'KOV, A.S., dotsent, red.; [illegible], N.A., tekhn.red.

[Forging and stamping machines] Kuznechno-shtampovochnye mashiny. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 80 p. (Nauchno-populiarnaia biblioteka rabochego kuznetsa, no.5) (MIRA 12:11)

(Forging machinery) (Power presses)

SOV/163-59-1-24/30

18(5)
AUTHORS: Tarnovskiy, I. Ya., Ganago, O. A., Vaysburd, E. A.

TITLE: Determination of the Forces in Swage Forging of Axially Symmetrical Forgings (Opredeleniye usiliy pri shtampovke osesimmetrichnykh pokovok)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, Nr 1, pp 126 - 132 (USSR)

ABSTRACT: In the articles cited by references 1,2,3,4,and 5 the statement is found that in any kind of drop forging a certain amount of surplus metal is pressed from the swage into the fin groove, after the swage has been completely filled. This stage, termed "pre-forging" stage, of the forging process is distinguished by requiring the maximum forging force which must be determined in order to ascertain the required press or hammer weight. It has been found that in the pre-forging stage not the total metal volume contained in the swage is subjected to deformation, but only that part of the volume being near the swage surface. If ways and means would be found of determining the actual deformation zone in the pre-

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forging stage a determination of the force required could be achieved with a sufficient accuracy. There is no necessity of taking into account the complicated shape of the swage and thus the number of variables is reduced. Only the diameter of the swage at the inside perimeter of the fin groove, the dimensions of this groove and the ratio between the fin thickness and the dimensions of the actual deformation zone of the forging in the pre-forging stage must be taken into account. The accuracy in solving this problem depends upon the accuracy with which the boundaries of the actual deformation zone of the metal in the swage can be determined and upon the simplifying restrictions placed upon some of the formulas. Various methods of determining these boundaries are found in publications (Refs 1,2,3,4,5). In this article the shape of the deformation zone is for the sake of simplicity assumed to be conical. For the purpose of determining the actual plastic deformation in the pre-forging stage the law of the minimum of total deformation energy was applied. This allows a theoretical deformation of the boundaries of the deformation

zone. This problem was solved by applying the Ritz variation method. Its application to the upsetting deformation of metals has been described in earlier articles (Refs 6,7). Comprehensive experimental information was used in establishing formula (1) which describes the curve expressing the actual propagation of the deformation zone in drop forging. This formula only describes the shape of the boundary between the rigid and the plastic zone of the forging. The volume of the deformation zone depends upon the varying parameter a_1 which is determined by the law of the minimum of the total deformation work and is specified by formula (15). a_1 determines the propagation of the zone of plastic deformation. Formula (15) for $\frac{p}{\sigma_s}$ is obtained, where p denotes the average specific pressure and σ_s the yield point at given temperatures and velocities. The experimental checking of formula (15) yielded satisfactory

results. Formula (13) on simplification gives formula (14) and formula (15) on simplification gives formula (16). These formulas can, however, only be used if the height of the deformation zone does not exceed the depth of the swage and if the temperature both of the forging and of the fin are equal. There are 4 figures and 8 Soviet references.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural'skiy Polytechnical Institute)

SUBMITTED: April 7, 1958

(GANAGO, O. A.)

25(1) PHASE I BOOK EXPLOITATION SOV/3283

Tarnovskiy, Iosif Yakovlevich, Aleksandr Aleksandrovich Pozdeyev, and Oleg Aleksandrovich Ganago

Deformatsii i usiliya pri obrabotke metallov davleniyem (Deformations and Forces in Metal Forming) Moscow, Mashgiz, 1959. 303 p. Errata slip inserted. 5,000 copies printed.

Reviewer: Ye.P. Unksov, Professor, Doctor of Technical Sciences; Ed.: V.N. Vydrin, Docent, Candidate of Technical Sciences; Tech. Ed.: N.P. Yermakov; Exec. Ed.(Ural-Siberian Division, Mashgiz): A.V. Kaletina, Engineer.

PURPOSE: This book is intended for engineers and scientific workers as well as students of higher technical schools specializing in metal forming.

COVERAGE: The authors describe a method of investigating deformations in metal forming using the principle of the minimum of the total energy of deformation, and one of the direct (Ritz's) methods of variational calculus. The method of determining

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forces, required for the plastic deformation, from the condition of the conservation of energy is also presented. Besides the general method, the solution of a series of problems of open die forging and stamping, and the experimental check of the obtained theoretical formulas, are also given. The authors mention A.A. Il'yushin, S.A. Khristianovich, V.V. Sokolovskiy, A.D. Tomlenov, L.A. Shofman, Ye.P. Unksov, G.A. Smirnov-Alyayev, A.F. Golovin, and V.B. Lyashkov, as contributors in the theory of deformation. The authors thank V.N Trubin, S.G. Puchkov, R.A. Vaysburd, and G.A. Yeremeyev. There are 47 references: 46 Soviet and 1 German.

TABLE OF CONTENTS:

Deformations and Forces (Cont.) SOV/3283

AVAILABLE: Library of Congress

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VK/jb
4-11-60

TARNOVSKIY, I.Ya., prof., doktor tekhn.nauk; GANAGO, O.A., dots.;
VAYSBURD, R.A., inzh.

Investigating deformations and forces in forging on ring pads.
Izv.vys.ucheb.zav.; chern.met. 2 no.8:55-67 Ag '59.
(MIRA 13:4)

1. Ural'skiy politekhnicheskiy institut. Rekomendovano kafedroy obrabotki metallov devleniyem Ural'skogo politekhnicheskogo instituta.
(Deformations(Mechanics)) (Forging)

TARNOVSKIY, I.Ya.; GANAGO, O.A.; BAGROV, I.N.; SHELEKHOV, V.A.; Prinimali uchastiye: MAKAYEV, S.V., inzh.; RYABOKON', N.K., inzh.; KOTEL'NIKOV, G.V., inzh.; PUCHKOV, S.G., inzh.; STAROSELETSKIY, M.I., inzh.; BAKHAREV, V.P., tekhnik.

Developing a technology for the manufacture of lightweight railroad car wheels. Kuz.-shtam. proizv. 1 no.9:1-4 S '59. (MIRA 12:12)

(Car wheels) (Forging)

GANAGO, O.A.; DAMMER, A.E.

Rejects resulting from clamping defects in making axisymmetric forgings and ways to avoid them. Kuz.-shtam.proizv. 2 no.1: 7-10 Ja '60. (MIRA 13:5)
(Forging)

S/148/60/000/004/001/006
A161/A029

AUTHORS: Tarnovskiy, I.Ya, Ganago, O.A., Vaysburd, R.A.

TITLE: Deformations and Stresses in Closed Piercing Process

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - Chernaya metallurgiya, 1960, No. 4, pp. 99-108

TEXT: The "closed piercing, i.e., forcing the punch into a billet held in a shell (or die), is widely used for production of cupped parts, thick-walled containers, etc., and comes into use for cold extrusion of thin-walled aluminum, brass and steel. The process is analyzed in its three stages: the first stage when metal fills the space, the second stage in which metal is forced out from under the punch and flows upward, plastic deformation under the punch remaining at a certain depth, and the third stage, when all metal under the punch takes part in plastic deformation. The calculation of efforts necessary for the operation is of practical importance. The calculation method had been published previously (in Refs. 5,6, etc.). This article gives a practical calculation of a problem with analysis of the second and third stage of the process. A formula is derived (27) for determining the $\frac{P}{\sigma_s}$ value, i.e.,

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Deformations and Stresses in Closed Piercing Process

the pressure divided by the punch face area. For approximate practical calculations of pressure simplified formulas (28 and 29) are recommended for the second and third stage, respectively. The equation for $h_{u_2} = h_x$ (see figure) corresponding to the transfer from the second stage to the third stage is easily found from the equations (28) and (29). The following final equation is obtained:

$$\frac{h_x}{D} = 0.11 \frac{1 - \frac{D_{u_2}^2}{D^2}}{1-0.85 \frac{D_{u_2}}{D}}, \qquad (30)$$

There are 7 figures and 8 Soviet references.

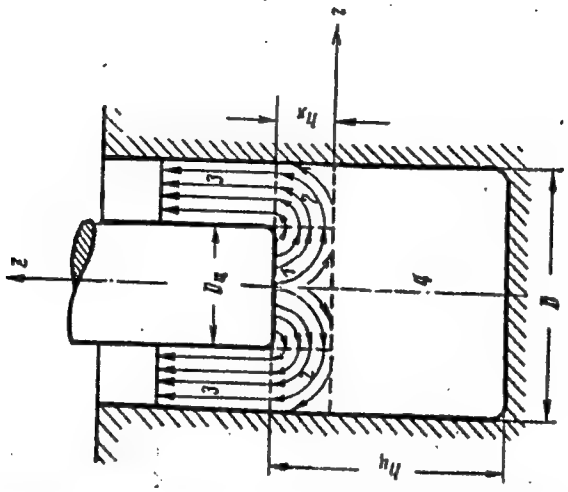
ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnical Institute)

SUBMITTED: May 25, 1959

S/148/60/000/004/001/006
A161/A029

Deformations and Stresses in Closed Piercing Process

Figure 1:



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TARNOVSKIY, I.Ya.; GANAGO, O.A.; VAYSBURD, R.A.

Investigating metal flow during upsetting with backing rings by means of the variations method. Izv.vys.ucheb.zav.; chern. met. no.5:55-60 '60. (MIRA 13:6)

1. Ural'skiy politekhnicheskiy institut.
(Forging) (Deformations (Mechanics))

SHELEKHOV, Vladimir Aleksandrovich; GANAGO, O.A., kand. tekhn. nauk, retsenzent; KON'KOV, A.S., dots., red.; DUGINA, N.A., tekhn. red.

[Forging with presses] Shtampovka na pressakh. Pod red. A.S.Kon'kova. Moskva, Mashgiz, 1961. 60 p. (Nauchno-popularnaia biblioteka rabochego kuznetsa, no.11) (MIRA 14:4)
(Forging) (Power presses)

24424?
11310

S/148/61/000/001/002/015
A161/A133

AUTHORS: Tarnovskiy, I. Ya.; Vaysburd, R. A.; Levanov, A. N.; Poksevayev, A. A.; Ganago, O. A., and Kotel'nikov, V. P.

TITLE: Selection of suitable functions for the utilization of the Ritz method in the theory of working metal by pressure

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 1, 1961, 73 - 83

TEXT: The article deals with the application of the Ritz method (Ref. 11: W. Ritz. Ueber eine neue Methode zur Loesung gewisser Variationsprobleme der mathematischen Physik. Journ. f. d. reine und angewandte Mathematik, Bd 135, H. 1, 1908) for the calculation of different practical problems of pressure working. Such problems consist in determining the functions of displacement components, and the searched for functions are written in a series:

$$U_k = a_1 f_1(x,y,z) + a_2 f_2(x,y,z) + \dots + a_n f_n(x,y,z), \qquad (5)$$

where U_k is any of the coordinate axes; a_i – are indefinite (variable)

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S/148/60/000/007/05/015
A [illegible]

Selection of suitable functions for the...

parameters; $f_i(x, y, z)$ - "suitable" functions reflecting qualitatively the displacements pattern and satisfying the boundary zone conditions. The problems discussed as examples are: upsetting of cylindrical billets between flat plates; a parallelepiped between flat plates, a case where the purpose is to determine the propagation of plastic deformation, with a simple axisymmetrical forging used as an example. The mathematical analysis of the individual cases ends with recommendations: 1) If the Ritz method is used, the suitable functions must be selected so as to fulfill more or less completely the boundary conditions corresponding the purpose of investigation. 2) The system of suitable functions describing the deformed state in technological problems can be selected with a series of rough assumptions (uniform deformation, the hypothesis of flat sections, etc.). 3) When the propagation of displacements and deformation within the body has to be determined in detail, the suitable functions will be more complex and contain two or three variable parameters, and at the same time satisfy the boundary conditions more completely. There are 8 figures and 13 references: 12 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute)

SUBMITTED: April 30, 1960

Card 2/2

27031

S/148/61/000/002/004/011
A161/A133

1.1310

AUTHORS: Tarnovskiy, I. Ya., Ganago, O. A. Vaysburd, R. A.

TITLE: Calculating the forces in drop and forging

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 2 1961, 51 - 61

TEXT: The rated pressing stress of presses has to be selected for the expected maximum pressure required, i.e., finish forging when the surplus metal of the blank is forced out into the flash. The high number of existing theoretical and empirical formulae show that the problem is both important and difficult to solve. Usually the zone of plastic deformation at the flash space is determined experimentally and the data are used for calculations. The authors consider this practice wrong since the results are correct for the definite experiment conditions only, and use a different approach. The article presents a mathematical analysis in which the spreading of the plastic deformation zone at the flash space is determined theoretically for the minimum (instead of the maximum) full deformation energy. This principle itself had been treated in three previous works [Ref. 8: I. Ya. Tarnovskiy, A. A. Pozdeyev, V. B. Lyashkov. Deformatsiya metalla pro pro-

Card 1/4

Calculating the forces in drop and forging

katke (Metal deformation in rolling), Metallurgizdat, 1956; Ref. 9: I. Ya. Tarnovskiy, O. A. Ganago, R. A. Vaysburd. "Nauchnyye doklady vysshey shkoly. Metallurgiya, 1959, no. 1; Ref. 10: I. Ya. Tarnovskiy, A. A. Pozdeyev. "Nauchn. dokl. v. shk. Metallurgiya", 1958, no. 1]. Numerous experiments had been conducted with coordinate networks traced in different portions of specimens and deformations studied with tool microscope, and the same means were used later for verifying the theoretical conclusions. A formula describing the real spread of the plastic deformation into the die cavity has been derived (see Figure 1, a):

$$h_{\Pi} = h_3 + a_1 h_3 \left(1 - \frac{x^2}{B_{\Pi}^2}\right), \qquad (1)$$

where h - current ordinate (or height) of expanding seat of plastic deformation; a_1 - indeterminate (variable) parameter. The formula (1) determines only the shape of the boundary between the rigid (1) and the plastic (2) zone in the forgings, but the volume of the plastic deformation zone depends on the variable parameter (a_1). This parameter is determined by the following analysis. An electronic computer had been used for more accurate calculations. The Simpson rule and the Siebel formula (the latter for the determination of specific contact friction) are employed in the derivation of the final two simple formulas (12) and (13) for the

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Calculating the forces in drop and forging

case of flat and of axially symmetric forgings:

$$\frac{p}{1.15\sigma_s} = 1 + 0.25\frac{B}{H_3}, \qquad (12)$$

where B = 2b is the width of the forging with the flash bridge; $H_3 = 2h_3$ - the flash thickness:

$$\frac{p}{\sigma_s} = 1 + 0.17\frac{D}{H_3}, \qquad (13)$$

where D is the forging diameter with the flash bridge. The formula (12) corresponds the formula obtained by Unksov [Ref. 12: Plasticheskaya deformatsiya pri kovke i shtampovke (Plastic Deformation in Forging and Stamping), Mashgiz, 1939] for the calculation of the stresses during upsetting between two parallel plates, and the formula is known as the Siebel formula derived for the case of upsetting of cylinders. This coincidence of the formulae leads to an important conclusion - that the value of the force required for finish forging depends not on the configuration of the forging in the vertical cross section, but on the shape and dimensions of the forging in the plane, the flash thickness, and the temperature and speed of

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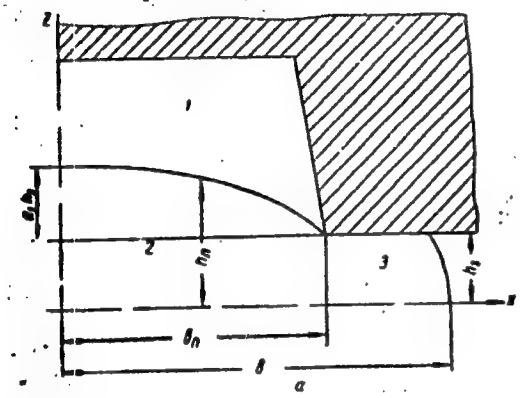
Calculating the forces in drop and forging

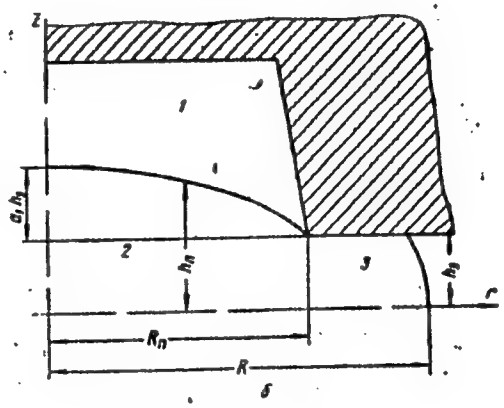
stamping. Experiments conducted with lead forgings gave results confirming this conclusion. There are 5 figures, 3 tables and 13 Soviet-bloc references.

Figure 1:

a - flat problem;



b - axially symmetric problem.



Card 4/4

18 1210

Z/034/61/000/004/005/005
E073/E335

AUTHORS: Orlov, S.N., Stukach, A.G. and Ganago, O.A.

TITLE: Method of Extrusion of Hard Aluminium Alloys and Other Low-plasticity Metals and Alloys (Soviet Patent No. 129616, Class 7b, 10, Valid from June 20, 1959, Published November 5, 1960)

PERIODICAL: Hutnické listy, 1961, No. 4, p. 290

TEXT: In order to increase the forming speed during extrusion of sections, an extrusion die with two zones was used, a compression zone and a sizing zone, which are separated by a cavity filled with lead, graphite or another substance which has a lubricating effect. This lubricant ensures maintaining in the extrusion blank a state of stress, without producing tensile stresses, and a high surface quality. The idea is demonstrated by a sketch, Fig. 5, where: 1 - the metal to be extruded; 2 - entry (compression) zone; 3 - extrusion die; 4 - sizing zone; 5 - cavity; 6 - lubricant; 7 - infeed of the lubricant; 8 - piston; 9 - rod.
(Abstractor's note: this is a complete translation.)

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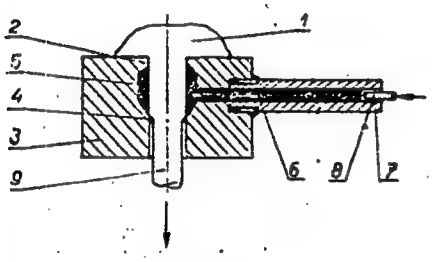
E073/E335

Method of Extrusion ....

Fig. 5:



Obr. 5.

Card 2/2

TRUBIN, V.N., kand.tekhn.nauk,red.; TARNOVSKIY, I.Ya., doktor tekhn.nauk,red.; GANAGO, O.A., kand.tekhn.nauk, retsenzent; DUGINA, N.A., tekhn. red.

[Making large forgings; results of studying industrial procedures]Kovka krupnykh pokovok; rezul'taty issledovaniia tekhnologicheskikh rezhimov. Moskva, Mashgiz, 1962. 223 p. (MIRA 15:8)

(Forging)

GANAGO, O.A.; TUNEV, G.Ya.; VAYSBURD, R.A.

Rolling the blanks of bore bit shanks. Kuz.-shtam.proizv. 4 no.8: 5-6 Ag '62. (MIRA 15:8)
(Rolling (Metalwork)) (Forging)

TARNOVSKIY, I.Ya.; MAKAYEV, S.V.; GANAGO, O.A.; STAROSELETSKIY, M.I.; SHELEKHOV, V.A.

Investigating the possibility of manufacturing railroad rails by drop forging in dies (without subsequent rolling). Kuz.-shtam.proizv. 4 no.12:1-3 D '62. (MIRA 16:1)
(Forging) (Car wheels)

GANAGO, O.A., kand. tekhn. nauk, red.; SHELEKHOV, V.A., inzh., red.; BALYASNYY, I.M., inzh., red.; KOLOSOVA, E.L., red. izd-va; DUGINA, N.A., tekhn. red.

[Improvement of forging and die stamping operations] Sovershenstvovanie kuznechno-shtampovochnogo proizvodstva; obobshchenie opyta Ural'skikh zavodov. Moskva, Mashgiz, 1963. 215 p. (MIRA 16:11)

(Forging) (Sheet-metal work)

AM4017082 BOOK EXPLOITATION S/

Ganago, O. A. (Candidate of Technical Sciences); Shelekhov, V. A. (Engineer); Balyasnyy, L. M. (Engineer)

Improvements in forging; generalization of the experience of Ural plants (Sovershenstvovaniye kuznechno-shtampovochnogo proizvodstva; obobshcheniye opyta Ural'skikh zavodov) Moscow, Mashgiz, 1963. 216 p. illus., biblio. 3000 copies printed. Cover: B. I. Tyufyakova; Editor of the publishing house: E. L. Kolosova; Technical editor: N. A. Dugina; Proofreader: M. K. Arsen'yeva.

TOPIC TAGS: forging, hot pressing, cold pressing, die forging, drop forging, heat treatment, stainless steel, carbon steel, alloy steel

PURPOSE AND COVERAGE: This book is intended for engineers, technicians, and scientific personnel connected with forging production. It has been compiled from material having the general theme of improvement in forging in plants in the Sverdlovsk and Chelyabinsk oblasts. Improvement in the organization of production and planning in forge shops, improvement in the technology of hot and cold pressing and die forging and in heating methods, and the mechanization and automation of

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forging and pressing operations are analyzed.

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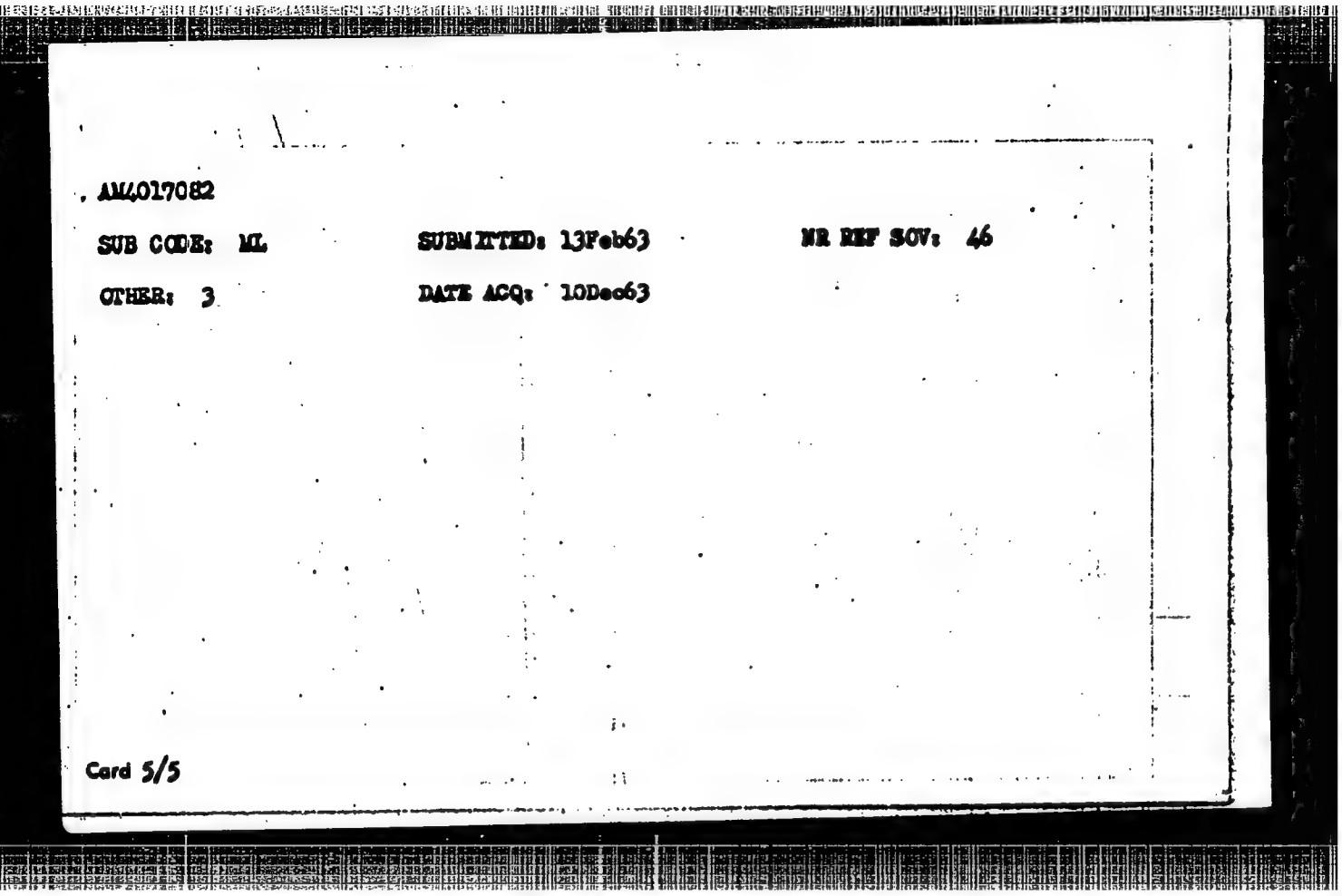

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SUB CODE: ML SUBMITTED: 13Feb63 NR REF SOV: 46

OTHER: 3 DATE ACQ: 10Dec63

Card 5/5

TARNOVSKIY, Iosif Yakovlevich; POZDEYEV, Aleksandr Aleksandrovich; GANAGO, Oleg Aleksandrovich; KOLMOGOROV, Vadim Leonidovich; TRUBIN, Valeriy Nikolayevich; VAYSBURD, Rual'd Arkad'yevich; TARNOVSKIY, Valeriy Iosifovich; GOROBINCHENKO, V.M., red. izd-va; BEKKER, O.G., tekhn. red.

[Theory of working metals by pressure; variational methods of calculating forces and deformations] Teoriia obrabotki metallov davleniem; variatsionnye metody rascheta usilii i deformatsii. [By] I.IA.Tarnovskii i dr. Moskva, Metallurgizdat, 1963. 672 p. (MIRA 17:1)

TARNOVSKIY, I.Ya.; LYASHKOV, V.B.; GANAGO, O.A.

Review of V.G. Shal'nev's book "Expanding methods of metal-working by pressure. Kuz.-shtam. proizv. 5 no.9:47-48 S '63. (MIRA 16:11)

TARNOVSKIY, I.Ya.; VAYSBURD, R.A.; YEREMEYEV, G.A.; GANAGO, O.A.

Forces in open die forging. Izv. vys. ucheb. zav.; chern. met. 7 no.1:113-122 '64. (MIRA 17:2)

1. Ural'skiy politekhnicheskiy institut.

GANAGO, O.A.; STEPANENKO, V.I.; TARNOVSKIY, I.Ya.

Forces during shaped, closed die piercing. Izv. vys. ucheb. zav.; chern. met. 8 no.5:104-111 '65. (MIRA 18:5)

1. Ural'skiy politekhnicheskiy institut.

GANALANYAN, O.T.

Avetik Isaakian. Uch. zap. Eriv. gos. russ. ped. inst. 5:17-31 '55. (MLRA 9:10)

(Isaakian, Avetik, 1875-)

NAMITOKOV, K.K.; GANAPOL'SKIY, Ye.M.

Dynamometer for measuring metal cutting forces. Vest. mash. 36 no.8:47-48 '56. (MLRA 9:10)

(Dynamometer) (Metal cutting)

33990
S/056/62/042/001/002/049
B125/B108

24,1800 (also 1063, 1147, 1482)

AUTHORS: Ganapol'skiy, Ye. M., Chernets, A. N.

TITLE: Excitation of hypersound in quartz

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 12 - 15

TEXT: The coaxial resonator with inhomogeneous h.f. electric field (Fig 1) can simultaneously produce longitudinal and transverse hypersound waves of 10^{10} cps. The hypersound was excited in a helium cryostat at 4.2°K to reduce attenuation. The generator produced 0.8 μsec-pulses, the receiver had a sensitivity of $5 \cdot 10^{-13}$ watts, the transmission band was 6 Mcps. The longitudinal and transverse deformation components, resulting from the action of the v.h.f. electric field, produce one longitudinal and two coupled transverse waves which propagate in the x-direction of the quartz. The velocities of these waves agree aside from a measuring error of 5% with the velocities calculated from the elastic constants for quartz. Liquid helium was supplied by the FTI AN USSR for which B. G. Lazarev.

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B125/B108

Excitation of hypersound in quartz

Academician AS UkrSSR, is thanked. There are 3 figures and 5 references: 1 Soviet and 4 non-Soviet. The four references to English-language publications read as follows: E. H. Jakobsen. Phys Rev. Lett., 2, 240, 1959; E. H. Jakobsen. Proceedings of the International Conference on Quantum Electronics, September, 1959. Columbia University Press, New York, 1960; H. E. Bömmel, K. Dransfeld. Phys. Rev., 117, 1245, 1960; W. G. Borgnis. Phys. Rev., 98, 1000, 1955.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR (Institute of Radiophysics and Electronics of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: May 27, 1961

Fig. 1. Resonator.

Legend: (1) Cone, (2) thin diaphragm, (3) quartz, (4) metal screen, (5) waveguide, (6) coincident quarter-wave transformer, (7) connecting hole, (A,B) quartz surfaces.

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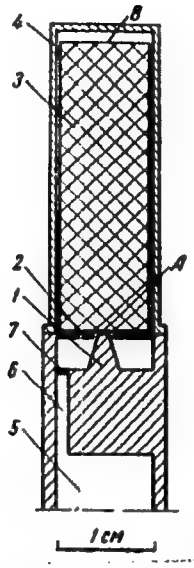
Excitation of hypersound in quartz.

Fig. 1



Card 3/3

S/141/63/006/001/018/018
E192/E382

AUTHORS: Ganapol'skiy, Ye.M. and Chernets, A.N.

TITLE: A certain type of resonator for magnetic radiospectroscopy at UHF

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, v. 6, no. 1, 1963, 196 - 198

TEXT: The minimum observed value of the imaginary component of magnetic susceptibility of a paramagnetic sample situated in the resonator of a radiospectroscope is given by: (J.G. Feher - Bell Syst. Techn.J., 36, 449, 1957):

$$\chi'' = \frac{1}{V_s \gamma_\pi} \left(\frac{kT\Delta\nu}{2P_o} \right)^{1/2} \qquad (1)$$

where $\gamma = 4\beta Q_o / (1 + \beta)^2 V_{\vartheta\phi\phi}$ for a reflecting resonator,

$\gamma = 4\beta Q_o / \sqrt{2}(1 + 2\beta)^2 V_{\vartheta\phi\phi}$ for a transmission resonator,

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A certain type of ....

$V_{эфф} = H_o^{-1} \int_V H^2 dv$, where H is the magnetic field, β is the coupling parameter and Q_o is the quality factor of the resonator without load; the other symbols are: T - noise temperature, $\Delta\nu$ - operating bandwidth, P_o - power of the signal klystron, V_s - volume of the sample, V - volume of the resonator and $V_{эфф}$ - effective volume of the resonator.

Eq. (1) shows that the sensitivity of the spectroscope increases with increasing γ. Thus, the sensitivity can be increased by increasing Q_o. On the other hand, γ can be increased by concentrating the high-frequency magnetic field in a small volume. This can be done in coaxial or strip resonators but in such systems the effective volume is still comparatively large. This difficulty is overcome in the resonators represented in Fig. 1, where the electromagnetic field is concentrated in a narrow slot formed by the wide wall of a waveguide in a rectangular step inside it. Such a system behaves as a resonator and can be referred to as a "slot resonator". It can be in the form

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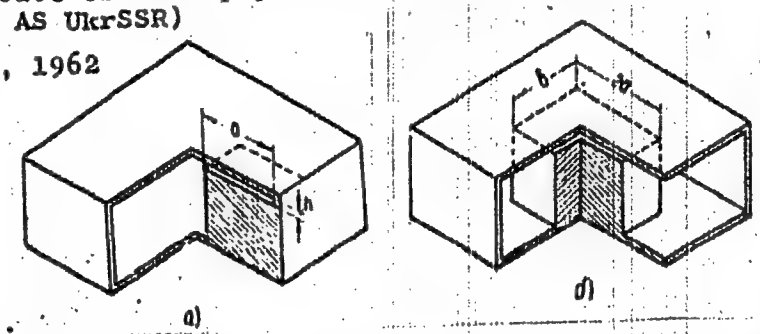
E192/E382

A certain type of ....

of a transmission resonator, as shown in Fig. 1б, or a reflection resonator as in Fig. 1а. The quality factor of such resonators is 100 to 300. This is expressed as $Q_o = h/\delta$, where h is the width of the slot and δ is the depth of the skin-effect layer. Since such resonators have a comparatively low Q_o, the frequencies of the signal and local oscillator klystrons do not have to be particularly stable. There are 2 figures and 1 table.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR (Institute of Radiophysics and Electronics of the AS UkrSSR)

SUBMITTED: May 19, 1962



Card 3/3 Fig. 1:

S/020/63/149/001/008/023
B102/B186

AUTHORS: Ganapol'skiy, Ye. M., Chernets, A. N.

TITLE: Hypersound excitation by slow electromagnetic waves

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 1, 1963, 72 - 75

TEXT: Since the usual method of producing hypersound, based on the piezo-effect in thin quartz rods or bars placed in the electric field of a cavity resonator, has met with serious difficulties above $2.4 \cdot 10^{10}$ cps, mainly arising due to a reduction in dimensions and quality of the resonator, the hypersound excitation by slow electromagnetic surface waves is of great interest. It is very effective and makes it possible to reach higher frequencies ($> 10^{10}$ cps). The present paper gives a theoretical analysis of this method. A quartz single crystal is placed in the field (frequency ω, wave number h) so that the coordinate system coincides with the crystallographic directions (X,Y,Z) and x = 0 forms the surface plane at which the boundary conditions $\frac{\partial u_x}{\partial x} = \gamma_{111} E_x$; $\frac{\partial u_x}{\partial y} + \frac{\partial u_y}{\partial x} = 2\gamma_{221} E_y$; $\frac{\partial u_t}{\partial x} = 2\gamma_{231} E_y$ are assumed to hold. The kinetic equations are solved in first approximation

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with respect to the small parameter $\mu = h/k_1 = v_s^{(1)}/v_0$, the ratio of sonic velocity in the quartz to the propagation rate of the electromagnetic surface wave. The solution reads

$$u_x = u_{0x} P_1 + O(\mu) P_2 + O(\mu) P_3 + p_x P_4;$$
$$u_y = O(\mu) P_1 + \alpha u_{0y} P_2 + \beta u_{0z} P_3 + p_y P_4;$$
$$u_z = O(\mu) P_1 + \beta u_{0y} P_2 - \alpha u_{0z} P_3 + p_z P_4. \qquad (4),$$

where

$$P_i = e^{ik_i x + ihy - iut}, \quad i = 1, 2, 3; \quad P_4 = e^{-px + ihy - iut},$$
$$\alpha^2 + \beta^2 = 1,$$

u_x, u_y, u_z are the projections of the deformation vector, λ_{iklm} is the tensor of the elastic moduli, $\beta_{l,ik}$; $\gamma_{l,ik}$ are the piezoelectric tensors ($\beta_{l,ik} = \gamma_{l,mn}\lambda_{mn,ik}$), ϱ the density of the quartz; $p^2 = h^2 - k_0^2$, $k_0 = c\omega$, c-velocity of light; $k_i = \omega/v_s^{(i)}$; $v_s^{(i)}$ is the sonic velocity along x;

$$\alpha^2 = (\lambda_{1313} - \rho v_s^{(2)2})^2 [\lambda_{2113}^2 + (\lambda_{3113} - \rho v_s^{(2)2})^2]^{-1};$$

The hypersonic wave amplitudes are obtained as

Hypersound excitation by slow...

$$u_{0x} = \gamma_{111}\frac{E_{0x}}{k_1};\quad u_{0y} = \frac{2E_{0y}}{ik_0}\left(\frac{\alpha\gamma_{121}+\beta\gamma_{122}}{\alpha^2+\beta^2}\right);\quad u_{0z} = \frac{2E_{0y}}{ik_0}\left(\frac{\beta\gamma_{121}-\alpha\gamma_{122}}{\beta-\beta^2+\alpha^2}\right). \quad (6)$$

and the p-components are given by

$$p_x = \mu\frac{(\beta_{111}E_{0x}-i\beta_{112}E_{0y})}{\lambda_{1111}k_1};\quad p_y = \mu\frac{(\beta_{221}E_{0y}-i\beta_{122}E_{0x})}{\lambda_{1111}k_1};$$
$$p_z = \mu\frac{(\beta_{221}E_{0y}-i\beta_{122}E_{0x})}{\lambda_{1111}k_1}. \quad (7).$$

In the case of $\mu=0$ three types of pure sonic waves are excited: a longitudinal one ($v_s^{(1)}$), and two crossed transverse ones ($v_s^{(2)}$, $v_s^{(3)}$). The powers of these waves are

$$W_n = \frac{1}{2}\lambda_{1111}\gamma_{111}^2 E_{0x}^2 v_s^{(1)} S,$$
$$W_{t_1} = \frac{1}{2}E_{0y}^2\left(\frac{\alpha\gamma_{121}+\beta\gamma_{122}}{\alpha^2+\beta^2}\right)^2(\lambda_{1212}\alpha^2+\lambda_{1212}\alpha\beta+\lambda_{1313}\beta^2)\,v_s^{(2)}S, \quad (8),$$
$$W_{t_2} = \frac{1}{2}E_{0y}^2\left(\frac{\beta\gamma_{121}-\alpha\gamma_{122}}{\beta^2+\alpha^2}\right)^2(\lambda_{1212}\beta^2-\lambda_{1212}\alpha\beta+\lambda_{1313}\alpha^2)\,v_s^{(3)}S;$$

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where S is the cross-sectional area of the hypersonic ray. The power ratio between the longitudinal wave and the electromagnetic wave is $\eta_n = w_n/w_e = \lambda_{1111} r^2_{111} \frac{\lambda_s l \omega^2}{\pi \beta_e^2 c^2}$ where λ_s is the hypersonic wave length, $\beta_e = v_e/c$, L is the length of the crystal along y. This method was used for exciting hypersonic waves in a quartz rod at 4.2°K. The frequency reached was $4 \cdot 10^{10}$ cps and the power ratio agreed with the theoretical one

$$W_n : W_{t_1} : W_{t_2} \approx 1 : \left(\frac{p}{h}\right)^2 : \left(\frac{p}{h}\right)^2 0{,}6 \qquad (8^a).$$

There are 2 figures.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk USSR (Institute of Radiophysics and Electronics of the Academy of Sciences, UkrSSR)

PRESENTED: September 12, 1962, by N. N. Andreyev, Academician
SUBMITTED: September 12, 1962

GANAPOL'SKIY, Ye.M.; CHERNETS, A.N.

Resonance absorption of hypersound of frequency 10^{10} cps in ruby. Zhur. eksp. i teor. fiz. 47 no.5:1677-1682 N '64. (MIRA 18:2)

1. Institut radiofiziki i elektroniki AN UkrSSR.

L 45570-66 EWT(l)/EWT(m)/EWP(k)/T/EWP(e)/EWP(w) IJP(c) EM/WH/WW

ACC NR: AP6031430 SOURCE CODE: UR/0056/66/051/002/0383/0393

AUTHOR: Ganapol'skiy, Ye. M.; Chernets, A. N. 30 B

ORG: Institute of Radiophysics and Electronics, Academy of Sciences Ukrainian SSR (Institut radofiziki i elektroniki Akademii nauk Ukrainskoy SSR)

TITLE: Hypersound absorption in quartz and ruby crystals

SOURCE: Zh eksper i teor fiz, v. 51, no. 2, 1966, 383-393

TOPIC TAGS: hypersound, hypersound absorption, quartz crystal, ruby crystal, hypersonic wave

ABSTRACT: The frequency-temperature dependences of absorption coefficients of a longitudinal and two transverse hypersonic waves directed along the binary x-axis of a quartz crystal have been measured at temperatures between 10 and 300K at a frequency of 10^9 cps and between 10 and 40K at frequencies of $9.4 \cdot 10^9$ and $4 \cdot 10^{10}$ cps. Absorption of a longitudinal hypersonic wave was measured along the trigonal Z-axis of quartz and ruby at frequencies of 10^9 and $9.4 \cdot 10^9$ cps. It was found that three-phonon scattering of longitudinal and transverse external hypersonic phonons on corresponding longitudinal and transverse thermal phonons, are responsible for hypersound absorption at low temperatures. This process can be used in explaining the fan-shaped frequency-temperature variation of the hypersound absorption coefficient. Orig. art. has: 10 formulas, 4 figures, and 1 table. [CS]

SUB CODE: 20/ SUBM DATE: 25Feb66/ ORIG REF: 004/ OTH REF: 014/ ATD PRESS: 5083

Card 1/1 hs

USSR/Diseases of Farm Animals - Diseases Caused by Helminths. R-3

Abs Jour : Ref Zhur - Biol., No 11, 1958, 50233

Author : Ganasevich, V.I., Skovronskiy, R.V.

Inst : L'vov Zoological Institute of Veterinary Sciences.

Title : Treating Fascioliasis in Rabbits and Guinea Pigs by Carbon Tetrachloride.

Orig Pub : Sb. nauchn. tr. L'vovsk. zoovet. in-t, 1956, 8, 92-94.

Abstract : A hypodermic injection of a 0.3 ml/kg dose of CCl_4 had a good anthelmintic effect when it was administered to fascioliasis afflicted rabbits. A 0.2 ml/kg injection of CCl_4, however, administered to guinea pigs did not produce curative effects.

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GANASINSKI, R.

POL. 3

Histopathological changes in the cerebrum and spinal cord in sheep infected with the fixed virus of rabies. R. Ganasinski (*Ann. Univ. M. Curie-Sklodowska*, 1952, 7, 133–149). The cerebral lesions found in sheep intracerebrally infected with the fixed virus of rabies are vascular and perivascular infiltrations, the greatest intensity being found in the mesencephalon. The lack of inflammatory changes in the infiltrated area suggests that the phenomenon is of a defensive nature. The lesions caused by the fixed virus, unlike those of the street virus, are similar to those of neurotropic viruses, especially the virus of infectious encephalomyelitis in sheep.

E. M. RATTENBURY.

EXCERPTA MEDICA Sec.4 Vol.8/8 Microbiology Aug 55

2408. GANASIŃSKI R. Zak. Anat. Patol. Wydzialu Wet., Wydzialu Anat. Patol. w Putawach.* Istota zmian histopatologicznych w mozgu i rdzeniu u owiec zakazonych ustalonym zarazkiem wscieklizny. The histopathological changes in the cerebrum and spinal cord in sheep infected with the fixed virus of rabies ANN. UNIV. LUBLIN, sect. D. D. 1954, 7/1952 (133-148) Tables 3 Illus. 3

(1) Essential changes in sheep intracerebrally infected with the fixed virus consist of vascular and perivascular infiltrations in the nervous tissue. (2) The intensity of the changes is most marked in the vessels of the mesencephalon i.e. in the vessels of the Ammon's horns, caudate nucleus and pons Varolii. (3) These cellular infiltrations seem to represent a direct response of the histiocytary system and therefore are not a sign of exudation accompanying inflammatory processes. (4) On the basis of histological examinations the difference between the fixed virus and the street virus seems to be in the fact that the former causes cerebral lesions similar to those caused by neurotropic viruses, which are responsible for infectious virusal diseases of the central nervous system. Author (V,4)

EYDUS, L.Kh.; GANASSI, Ye.E.

Studies on the mechanism of radiation "aftereffect" in proteins [with summary in English]. Biofizika 4 no.2:215-223 '59. (MIRA 12:4)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.

(MUSCLE PROTEINS,
myosin solution, after-eff. of x-irradiation (Rus))
(ROENTGEN RAYS, effects,
on myosin solution, after-eff. (Rus))

ZHURAVLEV, A.I.; GANASSI, Ye.E.

On chain reactions in liver lipids in radiation injury. Voen.-med. zhur. no.8:32-37 Ag '59. (MIRA 12:12)
(RADIATION INJURY metab.)
(LIPIDS metab.)
(LIVER radiation eff.)

EYDUS, L.Kh.; GANASSI, Ye.E.

Existence of several types of latent injuries in irradiated myosin molecules. Biofizika 5 no.3:334-338 '60. (MIRA 13:7)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(MYOSIN) (GAMMA RAYS--PHYSIOLOGICAL EFFECT)

EYDUS, L.Kh.; GANASSI, Ye.E.

Analyzing the action of principal physical factors modifying radiosensitivity. Biofizika 5 no. 5:523-532 '60. (MIRA 13:10)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(RADIATION--PHYSIOLOGICAL EFFECT) (ELECTRONS)

3/677
S/020/61/140/002/023/023
B103/B101

27.1220
21.7200

AUTHORS: Eydus, L. Kh., Ganassi, Ye. E., and Otarova, G. K.

TITLE: The role of water in the irradiation "aftereffect"

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 140, no. 2, 1961, 475-478

TEXT: The authors report on experiments concerning the thermal inactivation of intact pepsin and pepsin irradiated with Co^{60} γ-rays. The results confirmed the assumption saying that the aftereffect of irradiation is caused by water. The role of water was explained by comparing the aftereffects in the presence and absence of water. The decrease of the proteolytic activity of pepsin, determined from the specific absorption (at λ ~ 280 mμ) of the proteolytic products of hemoglobin, was used as a criterion of its damages. Pepsin solutions were studied in acetate buffer solution (pH = 4.65-4.80) or in anhydrous glycerol (adjusted to pH = 4.6 by acidification with glacial acetic acid). The pepsin was obtained by the Northrop method as modified by G. A. Levdikova (Vopr. med. khimii, 2, 53 (1956)). In the laboratory of Professor A. S. Kuz'minskiy, Vsesoyuznyy nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (All-Union

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The role of water in the ...

Scientific Research Institute of the Rubber Industry), dry pepsin was irradiated with a Co^{60} γ-radiation dose of 10^4 r/min. The irradiation of the pepsin solutions with Co^{60} was carried out with the ГУБЭ-800 (GUBE-800) device of the Institut biofiziki AN SSSR (Institute of Biophysics, AS USSR) with a dose of ~500 r/min and at room temperature. The thermal inactivation of the dry pepsin was performed a) in an air thermostat (100-130°C), b) in an ultrathermostat filled with glycerol (130-150°C); pepsin solutions were inactivated in the ultrathermostat. It has previously been shown (E. Yo. Ganassi et al., Radiobiologiya, 1, no. 1 (1961); Ref. 6, see below) that irradiation causes latent damages in both dissolved and dry pepsin, which account for the thermal after-effect. In both cases, the protein incubated in solution after irradiation is inactivated more quickly than the intact one, and partly loses its activity. This loss characterizes the "intensity" of the aftereffect, and increases with increasing direct radiation damage. To explain the role of water in the thermal aftereffect, dry pepsin was irradiated with 5 to 11 million r and then exposed to temperatures of 100-150°C. At the same time, dry, non-irradiated pepsin was incubated under equal conditions. The time of incubation differed as a result of the temperature

The role of water in the ...

dependence of the rate of thermal inactivation. Intact and irradiated proteins showed the same rate. The ratio was 1.00 ± 0.002, which indicates the absence of a thermal aftereffect. It is noted that either the high temperature exerts a protective action, so that there are no latent changes in the protein after incubation, or water is indispensable for the occurrence of an aftereffect. In order to prove this, the protein which had been thermally inactivated in dry state, was dissolved in acetate buffer and incubated in solution between 47 and 54°C. At these temperatures the thermal aftereffect was noticeable. Its activation energy was equal to that of protein which had not been heated prior to dissolution. The intensity of the irradiation aftereffect depended only on the dose, but neither on the time nor on the temperature of the preceding heating of the irradiated, dry protein. Thus, heating does not eliminate the causes of the aftereffect, but without water the latter did not become manifest. The authors attempted to prove in how far the role of water in this aftereffect is a specific property of water. Pepsin irradiated in dry state was dissolved in anhydrous glycerol. Also in this case the irradiated pepsin was inactivated at the same rate as the intact one. Hence, there is no thermal aftereffect under these conditions. Protein heated in

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The role of water in the ...

glycerol was dissolved in an acetate buffer solution, and exhibited a typical thermal aftereffect whose intensity was determined only by the radiation damage. The results obtained indicate that water is required for the manifestation of latent damages responsible for the thermal aftereffect of irradiation. Also the detrimental action of oxygen will not become manifest without water. There are 2 figures, 2 tables, and 8 references: 6 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: Ref. 6: R. S. Anderson. Brit. J. Radiol., 27, 56 (1954); Ref. 8: D. L. Dewey, Nature, 187, 1008 (1960).

ASSOCIATION: Institut biologicheskoy fiziki Akademii nauk SSSR (Institute of Biophysics of the Academy of Sciences USSR)

PRESENTED: April 10, 1961 by N. M. Sisakyan, Academician

SUBMITTED: March 30, 1961

Card 4/4

GANASSI, Ye.E.; KONDAKOVA, N.V.; OTAROVA, G.K.; EYDUS, L.Kh.

Common features of the manifestation of radiation aftereffect in proteins of different structure; comparative investigation of myosin and pepsin. Radiobiologiia 1 no.1:14-22 '61. (MIRA14:7)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(GAMMA RAYS--PHYSIOLOGICAL EFFECT) (MYOSIN)
(PEPSIN)

EYDUS, L.Kh.; GANASSI, Ye.E.; OTAROVA, G.K.

Role of water in the radiation "aftereffect." Dokl. AN SSSR 140 no.2:475-478 S '61. (MIRA 14:9)

1. Institut biologicheskoy fiziki AN SSSR. Predstavleno akademikom N.M.Sisakyanom.

(GAMMA RAYS--PHYSIOLOGICAL EFFECT) (PEPSIN)
(WATER--PHYSIOLOGICAL EFFECT)

GANASS I, YE, YE,

2

Mode of Action of Factors Modifying the Effect of Ionizing Radiation on Protein

E. E. Ganassi and L. Kh. Filus

The effect was investigated of various physical and chemical factors (heat, oxygen, water, protective chemical substances, etc.) which modify radiation injury to proteins.

Oxygen had no effect on the inactivation of pepsin in aqueous solution. However, the 'oxygen effect' is observed in the presence of some chemicals (e.g. sodium metabisulphite). When protein solutions were irradiated in an acetate or phosphate buffer or in the presence of some other substances, an 'inverse' oxygen effect was observed and the inactivation of the enzyme was reduced in the presence of oxygen.

When dry pepsin was irradiated, that part of the enzyme which remained active had latent injuries which caused the appearance of the 'thermal' after-effect. It was shown that the 'thermal' after-effect requires the presence of water; when the irradiated enzyme is heated in the dry state or dissolved in anhydrous glycerol, the latent injuries do not appear and the after-effect cannot be observed. The irradiated enzyme is inactivated by heat in the same way as the non-irradiated one. The 'thermal' after-effect can be detected only in solution.

Myosin solutions irradiated anaerobically give an after-effect caused by heat and O_2. It was shown that each of these two agents acts on only one of two different kinds of latent injury which arise in the enzyme molecule.

The study of the effect of various chemicals on the radio-sensitivity of pepsin disclosed the existence of an apparently non-specific mechanism of protection, discussed in the report.

Institute of Biophysics, Academy of Sciences of the USSR, Moscow

report presented at the 2nd Intl. Congress of Radiation Research,
Harrogate/Yorkshire, Gt. Brit. 5-11 Aug 1962

GHIVASSI, YE.YE.

Latent Lesions During Radiation-Induced Inactivation of Enzymes

L. Kh. Eidus, E. E. Ganassi and N. V. Kondakova

γ-radiation produces in the same protein molecules latent lesions of two kinds, one of which causes t[illegible] inactivation of the enzyme during subsequent access of oxygen, and the other during post-radiation heating [illegible] due to the combined after-effects in irradiated solutions of myosin is a large proportion of the total [illegible]ation damage.

The 'thermal' after-effect in myosin and pepsin enzymes of different nature and function is caused by the transition of some molecules to a state with a low activation barrier to thermo-inactivation. The degree of the 'thermal' after-effect and its energy of activation do not depend on whether the enzyme was irradiated dry or in solution. The method of electron paramagnetic resonance revealed in these enzyme molecules the presence of unpaired electrons with a long lifetime after irradiation in solution. These unpaired electrons are closely related to the radiation after-effect, and they disappear when the irradiated solutions are gently heated; at the same time the 'thermal' after-effect is obtained.

The same latent lesions as those after γ-irradiation were observed in the study of the photodynamic effect (PDE) in solutions of these enzymes in the presence of methylene blue or eosin. This is borne out by the activation barriers of the 'thermal' after-effect, the long lifetime of unpaired electrons, the form of the electron paramagnetic resonance spectra, and by other criteria which are identical for γ-radiation and for visible light (PDE). The mechanism of the formation of latent lesions due to the PDE, and the part played by O_2, are reported. Conclusions are drawn about the mechanism of inactivation of enzymes by ionizing radiation and by PDE, suggesting two stages, one of which is the formation of long-lived or short-lived latent lesions of the macromolecules.

Institute of Biophysics, Moscow, USSR

report presented at the 2nd Intl. Congress of Radiation Research, Harrogate/Yorkshire, Gt. Brit., 5-11 Aug 1962

272400 QSO 2220

AUTHORS: Ganassi, Ye. E. and Eydus, L. Kh.

40482
S/205/62/002/002/015/015
I020/I215

TITLE: A possible general operating mechanism of protective agents

PERIODICAL: Radiobiologiya, v. 2, no. 2, 1962, 332–334

TEXT: Loss in proteolytic activity of a 0.02 mg/ml aqueous pepsin solution (pH 4.5–4.6) exposed to Co^{60} gamma rays was examined by Anson's method. AET, sodium nembutal, cystamine, sodium metabisulfate and β-alamine were used as protective agents. The inactivation of pepsin depends exponentially upon the radiation dose and the protein concentration. It is suggested that a part of the molecule is blocked by the protective agent so that inactivating factors (free water radicals or oxygen) have no access to it. The enzyme itself is composed of two parts: one part is rapidly inactivated and its dose/inactivation dependence is the same as in the unprotected enzyme; the second part is practically not inactivated over a wide dose range. Some molecules are unblocked after a while and inactivated before being blocked again. Increased temperature during irradiation, and a longer irradiation period (with a decreased dose rate) brought about a more extensive inactivation of the blocked part of the enzyme. There is a direct dependence between the molecular size of the protective agents and their protective effect. The mechanism described is non-specific since different agents showed the same effect.

SUBMITTED: January 5, 1962.

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L 11247-63 EWT(1)/EWT(m)/BDS--AFFTC/AMD/ASD--RM/AR/K
ACCESSION NR: AP3001071 S/0205/63/003/003/0440/0446 61 59 19

AUTHOR: Ganassi, Ye. E.; Eydus, L. Kh.; Arifulina, R. A.

TITLE: Investigation in vitro of the action mechanism of chemical protective substances. Report 1

SOURCE: Radiobiologiya, v. 3, no. 3, 1963, 440-446

TOPIC TAGS: aminoethylisotiuron (AET), vinbarbital sodium, mercamine, bisulfate sodium, pepsin solution, gamma radiation, action mechanism

ABSTRACT: Most protective action theories are based on the known properties of a given protective substance itself rather than a mechanism common to protective substances. The present work investigates systematically the protective action of aminoethylisotiuron (AET), vinbarbital sodium, mercamine, bisulfate sodium, and beta-alanin, to which different action mechanisms have been attributed. The action mechanisms were studied by means of radiation inactivation of pepsin water solutions which were gamma irradiated from Co sup 60 or Cs sup 137 sources at 370 r/min. Radiation inactivation of pepsin in water takes place according to an exponential law, that is, the power of radiation increases with decrease of solution concentration. Figures 1-4 show pepsin irradiation inactivation in the presence of different protective substance concentrations. By analyzing the change of these dosage curves

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in the presence of the various protective substance concentrations, a mechanism common to all the protective substances is determined. Each substance apparently blocks radiosensitive parts of the protein molecule surface from oxygen access for a sufficiently prolonged time and this prevents hidden injuries of the "oxygen" type. "The authors express their gratitude to the doctor of biological sciences N. I. Shapiro and V. I. Suslikov for valuable remarks in discussing the study." Orig. art. has: 7 figures, 1 table.

ASSOCIATION: Institut biologicheskoy fiziki AN SSSR, Moscow (Institute of Biological Physics AN SSSR)

SUBMITTED: 010ct62 DATE ACQD: 01Jul63 ENCL: 00
SUB CODE: 00 NO REF SOV: 013 OTHER: 012

L 11251-63 EWT(1)/EWT(m)/BDS--AFFTC/AMD/ASD--AR/K

ACCESSION NR: AP3001079 S/0205/63/003/003/0483/0485

AUTHOR: Tolkacheva, Ye. N.; Ganassi, Ye. E.

TITLE: Chronicle. Symposium on action mechanisms of protective substances held in Moscow from 19 to 20 November 1962

SOURCE: Radiobiologiya, v. 3, no. 3, 1963, 483-485

TOPIC TAGS: protective substance action mechanisms, protective substance specialists

ABSTRACT: Seventy-five specialists participated in the symposium held November 19-20, 1962 in Moscow. The main problems considered were: 1) possible protective mechanisms in connection with modern concepts of radiation action, 2) the role of the oxygen effect in protective action mechanisms, 3) selection of model systems and their role in studying problems of protection. Participants reported on studies of various protective substances and advanced theories on their action. In conclusion L. Kh. Eydus pointed out the necessity of evaluating the significance of the mechanisms discussed in terms of the general effect of protection. S. N. Ardashnikov indicated that it is necessary to use substances with different mechanisms for maximum protection because damage to an organism is probably caused not only by

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